

CLAIMS:

1. A reflective article, comprising:

a substrate comprising an amorphous thermoplastic resin having

a heat distortion temperature of at least about 140°C measured at 66 pounds per square inch according to ASTM D648,

a density less than 1.7 grams per milliliter, and

an organic volatiles content less than 1,000 parts per million measured according to ASTM D4526;

a reflective metal layer; and

a haze-prevention layer interposed between the substrate and the reflective metal layer, wherein the haze-prevention layer comprises a material having a volume resistivity of at least 1×10^4 ohm-centimeters measured according to ASTM D257 at 25°C and a tensile modulus of at least about 3×10^5 pounds per square inch measured according to ASTM D638 at 25°C.

2. The reflective article of Claim 1, wherein the amorphous thermoplastic resin is selected from polyetherimides, polyetherimide sulfones, polysulfones, polyethersulfones, polyphenylene ether sulfones, poly(arylene ether)s, polycarbonates, polyester carbonates, polyarylates, and mixtures thereof.

3. The reflective article of Claim 1, wherein the amorphous thermoplastic resin comprises a polysulfone or an isophorone bisphenol-containing polycarbonate.

4. The reflective article of Claim 1, wherein the substrate is substantially free of inorganic filler.

5. The reflective article of Claim 1, wherein the substrate has a thickness of about 0.1 to about 20 millimeters in a dimension perpendicular to the haze-prevention layer and the reflective metal layer.

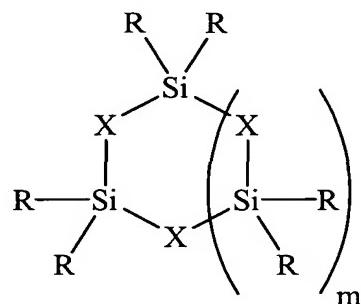
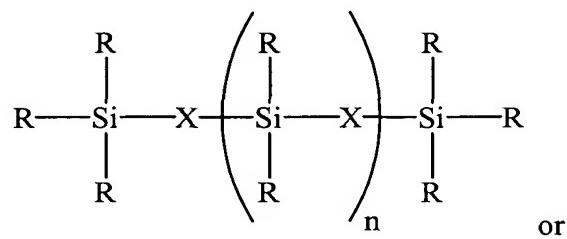
6. The reflective article of Claim 1, wherein the reflective metal layer comprises a metal selected from aluminum, silver, gold, nickel, palladium, platinum, copper, and alloys thereof.

7. The reflective article of Claim 1, wherein the reflective metal layer comprises aluminum.

8. The reflective article of Claim 1, wherein the reflective metal layer has a thickness of about 10 to about 1000 nanometers.

9. The reflective article of Claim 1, wherein the haze-prevention layer comprises a plasma-polymerized organosilicone.

10. The reflective article of Claim 9, wherein the organosilicone has the formula



wherein each occurrence of R is independently hydrogen, C₁-C₆ alkyl, C₂-C₆ alkenyl, C₃-C₆ alkenyl alkyl, or C₆-C₁₈ aryl; n is 0 to 100; m is 1 to 100; and X is -O- or -NH-.

11. The reflective article of Claim 9, wherein the organosilicone is octamethyl(cyclotetrasiloxane), hexamethyl(cyclotrisiloxane), tetramethyldisiloxane, hexamethyldisiloxane, octamethyltrisiloxane, vinyltriethoxysilane, vinyltrimethoxysilane cyclotetra(methylvinylsiloxane), cyclotri(methylvinylsiloxane), hexamethyldisilazane, or a mixture thereof.

12. The reflective article of Claim 1, wherein the haze-prevention layer comprises diamond-like carbon.

13. The reflective article of Claim 1, wherein the haze-prevention layer comprises a colloidal silica composition comprising colloidal silica dispersed in a silanol-, acrylic-, or methacrylic-derived polymer system.

14. The reflective article of Claim 1, wherein the haze-prevention layer comprises a thermoset resin selected from thermoset polyester resins, thermoset epoxy resins, novolac resins, and melamine resins.

15. The reflective article of Claim 1, wherein the haze-prevention layer has a thickness of about 100 nanometers to about 100 micrometers.

16. The reflective article of Claim 1, further comprising a protective layer having a percent transmittance of at least 90% measured according to ASTM D1003 at 25°C; wherein the reflective layer is interposed between the haze-prevention layer and the protective layer.

17. The reflective article of Claim 1, comprising a surface with a reflectivity of at least 80% measured according to ASTM D523.

18. The reflective article of Claim 1, wherein the article is an automotive headlight reflector.

19. A reflective article, consisting essentially of:
 - a substrate comprising an amorphous thermoplastic resin having
 - a heat distortion temperature of at least about 140°C measured at 66 pounds per square inch according to ASTM D648,
 - a density less than 1.7 grams per milliliter, and
 - an organic volatiles content less than 1,000 parts per million measured according to ASTM D4526;
 - a reflective metal layer; and
 - a haze-prevention layer interposed between the substrate and the reflective metal layer, wherein the haze-prevention layer comprises a material having a volume resistivity of at least 1×10^4 ohm-centimeters measured according to ASTM D257 at 25°C and a tensile modulus of at least about 3×10^5 pounds per square inch measured according to ASTM D638 at 25°C.

20. A reflective article, comprising:

a substrate comprising a polysulfone or an isophorone bisphenol-containing polycarbonate resin having

a glass transition temperature of at least about 170°C,

a density less than 1.7 grams per milliliter, and

an organic volatiles content less than 1,000 parts per million measured according to ASTM D4526;

a reflective metal layer comprising aluminum; and

a haze-prevention layer interposed between the substrate and the reflective metal layer, wherein the haze-prevention layer comprises a plasma-polymerized organosilicone having a volume resistivity of at least 1×10^{-2} ohm-centimeters measured according to ASTM D257 at 25°C and a tensile modulus of at least about 5×10^5 pounds per square inch measured according to ASTM D638 at 25°C.

21. A method for preparing a reflective article, comprising:

applying a haze-prevention layer to a surface of a substrate,

wherein the haze-prevention layer comprises a material having a volume resistivity of at least 1×10^4 ohm-centimeters measured according to ASTM D257 at 25°C and a tensile modulus of at least about 3×10^5 pounds per square inch measured according to ASTM D638 at 25°C, and

wherein the substrate comprises an amorphous thermoplastic resin having a heat distortion temperature of at least about 140°C measured at 66 pounds per square inch according to ASTM D648, a density less than 1.7 grams per milliliter, and an organic volatiles content less than 1,000 parts per million measured according to ASTM D4526; and

applying a reflective metal layer to a surface of the haze-prevention layer.

22. The method of Claim 21, further comprising applying a protective layer to the reflective metal layer; wherein the protective layer has a percent transmittance of at least 90% measured according to ASTM D1003.